

Protonically conducting material, its use for manufacturing a protonically conducting membrane for fuel cells and supercapacitors

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Abstract of EP0818841

Protonically conducting material comprising mineral compound dispersed in matrix polymer is claimed. Mineral compound is selected from Bronsted acids, insoluble in acid media, which have laminar structure capable of being inflated in water or polar solvent; specific surface area about $100\text{m}^2\text{g}^{-1}$; sub-micro granular structure which is stable up to about 150 degrees C; and electrical conductivity $\geq 10^{-2}\text{Scm}^{-1}$ at 100% relative humidity. Matrix polymer is polyelectrolyte or ionomer which has suitable properties for making film of thickness $\leq 150\text{ }\mu\text{m}$; which is impermeable to water, hydrogen, and oxygen; and which is stable up to 150 degrees C in acid medium, and electrochemically and mechanically stable. Also claimed is exchange membrane made from claimed material, after inflation by water, for use in fuel cell and super-capacitor.

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